

Please cancel previously submitted new claims 44, 62, and 63.

Pursuant to 37 C.F.R. § 1.121(b)(2), please amend the claims as follows:

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1. (Three Times Amended - Pending) In an electronic firearm for firing electrically activated ammunition, comprising a barrel [attached to a receiver], a chamber formed in the barrel [adjacent to the receiver, the receiver being] and adapted to receive at least one round of electrically fired ammunition, [the barrel and receiver encased in a stock, a moveable bolt assembly positioned within the receiver, the bolt assembly being adapted to convey a round of ammunition from the receiver into the chamber of the barrel, the bolt assembly comprising a bolt body, a bolt handle capable of moving the bolt assembly among open, closed, and closed and locked positions, and] an electrically conductive firing pin, a trigger assembly [operatively connected to the bolt assembly, and], a voltage supply means, and a safety mechanism [having at least a safe and fire position], the improvement comprising:

A. A system control means receiving power from the voltage supply means, programmed to control firing upon actuation of the trigger assembly, [safety, power conservation, and diagnostic functions,] the system control means comprising:

- i. Voltage increasing means connected to transmit increased voltage to the firing pin;
- ii. Switching means for isolating the firing pin from the voltage increasing means, and the voltage increasing means from the

voltage supply means, the switching means being activated upon the occurrence of at least one condition selected from:

- a. the absence of a round of ammunition within the chamber of the barrel;
- b. the safety mechanism being in [the] a safe position;
- [c. the bolt being in the unlocked position;]
- [d. the bolt being in the open position;]
- [e.] c. the passing of a predetermined period of inactivity of the firearm; and
- [f.] d. the failure or malfunction of the system control means or any component connected thereto;

[iii. Means for electronically detecting the presence of a round of ammunition within the chamber of the barrel;]

[iv. Means for monitoring the capacity of the voltage supply means; and]

[v.] iii. Electronic safety operatively connected to the safety mechanism for preventing voltage from reaching the firing pin when the safety mechanism is in the safe position and for preventing the system control means from detecting a trigger pull when the safety mechanism is in the safe position[;].

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- [B. Electronic trigger switch operatively connected to the trigger and the system control means, the electronic trigger switch adapted to send a signal to the system control means when the trigger is pulled;]
- [C. Electrical isolation means insulating the body of the firing pin, the firing pin having a forward conductive end and a rearward conductive area, the forward conductive end positioned to transmit voltage to a round of ammunition within the chamber of the barrel only when the bolt assembly is in a closed and locked position, the rearward conductive area positioned to receive voltage only when the bolt assembly is in the closed and locked position and;]
- [D. At least one indicator operatively connected to the system control means.]

2. (Amended - Pending). A firearm of claim 1 [wherein the] and further including a bolt assembly [has] having front and rear ends and which is movably positioned within [the] a receiver, positioned behind and substantially aligned with the barrel, the bolt assembly comprising a hollow bolt body operatively connected at its rear end to a hollow bolt plug, a bolt handle on the rear of the bolt assembly, a movable firing pin assembly within the bolt body having forward and rearward ends, and a firing pin spring to bias the firing pin assembly forward by acting between the bolt plug and the rear of the firing pin assembly.

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5. (Amended - Pending). A firearm of claim 3 wherein the firing pin plug is a threaded firing pin adjustment screw adapted to fit into a threaded aperture in the rear end of the

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bolt plug, and the firing pin assembly comprises the firing pin adjustment screw at its rearward end, the screw operatively connected to a firing pin plunger, the firing pin at a forward end of the firing pin assembly operatively connected to the firing pin plunger, and a firing pin plunger insulator between the firing pin plunger and the firing pin [plunger] plug, the firing pin assembly being biased forward by the firing pin spring acting on the firing pin plunger and the rear of the bolt plug.

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14. (Amended - Pending) A firearm of claim 1 [wherein the] and further comprising means for electronically detecting the presence of a round of ammunition within the chamber of the barrel [comprises], including at least two electrodes positioned to contact electrically conductive portions of a round of ammunition within the chamber.

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19. (Amended - Pending). A firearm of claim 1 [wherein the] and further including an electrical isolation means [comprises] comprising a modification of [the] a surface of the firing pin.

20. (Amended - Pending). A firearm of claim [16] 19 wherein the surface modification comprises ion implantation.

21. (Amended - Pending). A firearm of claim [1] 19 wherein the electrical isolation means comprises an insulating coating.

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25. (Amended - Pending). A firearm of claim 1 [wherein the] and further including
an electrical isolation means [comprises] comprising an insulating sleeve surrounding the firing
pin.

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30. (Twice Amended - Pending) A firearm of claim 1 and wherein the system
control means and electronic safety are adapted to isolate the firing pin when the safety
mechanism is in the safe position by rejecting signals received from the trigger [switch]
assembly (a) when the trigger assembly is [pulled] activated, and (b) when the trigger assembly
is [pulled] activated and held while the safety mechanism is switched from the safe position to
[the] a fire position.

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38. (Three Times Amended - Pending). In a process for firing electrically activated
ammunition from an electronic firearm comprising a barrel [attached to a receiver], a chamber
formed in the barrel [adjacent to the receiver, the receiver being] and adapted to receive at least
one round of electrically fired ammunition, [the barrel and receiver encased in a stock, a
moveable bolt assembly positioned within the receiver, the bolt assembly being adapted to
convey a round of ammunition from the receiver into the chamber of the barrel, the bolt
assembly comprising a bolt body, a bolt handle capable of moving the bolt assembly among
open, closed, and closed and locked positions, and], an electrically conductive firing pin, a
trigger assembly [operatively connected to the bolt assembly], a voltage supply means for
supplying a voltage to the firing pin, and a safety [having at least a safe and a fire position], the
improvement comprising:

A. Controlling and coordinating [all firing, safety, power conservation, and diagnostic functions, and regulating] the distribution of power to the firing pin through a system control by;

i. [Increasing the voltage from the voltage supply means, and] [regulating] Regulating the transmission of [the increased] voltage to the firing pin;

ii. Conserving power by isolating the firing pin from [the voltage increasing means, and the voltage increasing means from] the voltage supply means, upon the occurrence of at least one condition selected from:

a. the absence of a round of ammunition within the chamber of the barrel;

b. the safety being in [the] a safe position;

[c. the bolt being in the unlocked position;]

[d. the bolt being in the open position;]

[e.] c. the passing of a predetermined period of inactivity of the firearm;

d. unauthorized activation of the firearm;

[f.] e. the failure or malfunction of the system control means or any component connected thereto; and

[iii. Electronically detecting the presence of ammunition within the chamber of the barrel;]

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[iv. Monitoring the capacity of the voltage supply means; and]

[v.] iii. Preventing voltage from reaching the firing pin when the safety is in the safe position and preventing the system control from accepting [the] a signal from the trigger [switch] assembly generated by [a trigger pull] actuation of the trigger assembly when the safety is in the safe position[;]

[B. Sending a signal to the system control means when the trigger is pulled; and]

[C. Indicating the status of the firearm].

39. (Amended - Pending). A process of claim 38, further comprising detecting the presence of a round of ammunition within the chamber, and determining whether a detected round of ammunition within the chamber is viable.

40. (Amended - Pending). A process of claim 38 further comprising [visually] indicating the status of the firearm.

Please add the following new claims:

41. (New - Pending). A process of claim 38 and further including electronically detecting the presence of a round of ammunition within the chamber of the barrel.

42. (New - Pending). A process of claim 38 and further including monitoring the capacity of the voltage supply means.

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43. (New - Pending). A process of claim 38 and further including preventing voltage from reaching the firing pin when the safety is in a safe position.

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45. (New - Pending). The firearm of claim 1 and further including at least one indicator operatively connected to the system control means.

46. (New - Pending). The firearm of claim 1 and wherein the firing pin includes a forward conductive end for transmitting voltage to a round of ammunition within the chamber, and a rearward conductive area to receive voltage from the voltage increasing means.

47. (New - Pending). An electronic firearm, comprising:

- a barrel;
- a chamber in which a round of electrically fired ammunition is received;
- a conductive firing pin for transmitting power to the round of ammunition;
- a voltage supply for supplying power for initiating firing of the round of ammunition;
- a system control powered by said voltage supply and monitoring the firearm, for controlling the firing of the round of ammunition, said system control including a switching means for isolating said firing pin from receiving power supplied by said voltage supply upon the occurrence of at least one of the following conditions:

a. the firearm being in a sleep mode;

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- b. insufficient energy to initiate the firing of the round of ammunition;
 - c. detection of voltage from said voltage supply below a predetermined level;
 - d. detection of voltage from said voltage supply above a predetermined level;
 - e. absence of a round of ammunition in said chamber;
 - f. lack of viability of the round of ammunition;
 - g. inactivity of the firearm for a predetermined time;
 - h. unauthorized activation of the firearm;
 - i. failure of any electronically operated components of the firearm;
and
 - j. failure of the system control;

a trigger assembly communicating with said system control and having a trigger,
whereby as said trigger is activated, a signal is sent to said system control to initiate firing of the
round of ammunition; and

said system control further including an electronic safety operatively connected to
a firearm safety mechanism and responsive to activation of said firearm safety mechanism for
preventing power from reaching said firing pin and preventing said system control from
detecting activation of said trigger.

48. (New - Pending). The electronic firearm of claim 47 and wherein said system control further comprises a voltage increasing means for increasing voltage received from said voltage supply to a voltage sufficient to initiate the firing of the round of ammunition.

49. (New - Pending). The electronic firearm of claim 48 and wherein said switching means isolates said voltage supply from said voltage increasing means.

50. (New - Pending). The electronic firearm of claim 48 and wherein said switching means isolates said voltage increasing means from said firing pin.

51. (New - Pending). The electronic firearm of claim 47 and further comprising an indicator communicating with said system control for indicating the status of the firearm.

52. (New - Pending). The electronic firearm of claim 47 and further comprising a system authorization switch communicating with said system control for controlling access to the firearm.

53. (New - Pending). The electronic firearm of claim 47 and further comprising an insulating coating applied to said firing pin.

54. (New - Pending). The electronic firearm of claim 47 and further comprising an insulating sleeve positioned about said firing pin.

55. (New - Pending) The electronic firearm of claim 47 and wherein said system control means and electronic safety are adapted to isolate said firing pin when said firearm safety mechanism is in a safe position by rejecting signals received from said trigger (a) when said trigger is activated, and (b) when said trigger is activated and held while said firearm safety mechanism is moved from a safe position to a fire position.

56. (New - Pending). The electronic firearm of claim 47 and further including means for electronically detecting the presence of a round of ammunition in said chamber.

57. (New - Pending). The electronic firearm of claim 47 and wherein said firearm safety mechanism is movable between a fire and a safe position for placing the firearm in a nonoperative condition upon movement of said firearm safety mechanism to said safe position.

58. (New - Pending). The electronic firearm of claim 47 and wherein said system control includes programming for performing an operational sequence to monitor and control the firearm including initiating a sleep mode for the firearm to place the firearm in a nonoperative condition.

59. (New - Pending). The electronic firearm of claim 47 and wherein said system control comprises at least one of the following: a microprocessor, microcontroller, software, firmware, microcode, digital logic, analog logic, and custom integrated logic.

60. (New - Pending). An electronic firearm, comprising:

a barrel;

a chamber in which a round of electrically initiated ammunition is received;

a firing pin;

a trigger for initiating firing of the round;

a voltage supply for supplying power to said firing pin for firing the round;

a system control for monitoring the firearm and controlling the power supplied to

said firing pin in response to failure of any of a series of monitored operative conditions required for firing the firearm including:

- a. the firearm being in a sleep mode;
- b. insufficient energy to initiate the firing of the round of ammunition;
- c. detection of voltage from said voltage supply below a predetermined level;
- d. detection of voltage from said voltage supply above a predetermined level;
- e. inactivity of the firearm for a predetermined time;
- f. unauthorized activation of the firearm;
- g. failure of any electronically controlled and operated components of the firearm;
- h. failure of any programmed condition to be met; and
- i. failure of said system control;

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said system control including a switching means for isolating said firing pin from
said voltage supply to prevent the firing of the round of ammunition, and an electronic safety
responsive to activation of a firearm safety for isolating said firing pin and preventing said
system control from receiving a signal responsive to activation of said trigger.

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61. (New - Pending). The electronic firearm of claim 60 and further including a
voltage increasing means connected to said voltage supply and said firing pin for transmitting an
increased voltage to said firing pin for firing the round of ammunition.

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64. (New - Pending). The electronic firearm of claim 60 and further comprising at
least one indicator communicating with said system control means for indicating the status of the
firearm.

65. (New - Pending). The electronic firearm of claim 60 and wherein said firing pin
comprises a forward conductive end for transmitting voltage to a round of ammunition within the
chamber, and a rearward conductive area to receive voltage from the voltage supply.

66. (New - Pending). The electronic firearm of claim 60 and wherein said firing pin
further includes an insulating coating applied thereto.

67. (New - Pending). The electronic firearm of claim 60 and further including an
insulative sleeve positioned about said firing pin.

68. (New - Pending). The electronic firearm of claim 60 and further including a means for detecting the presence of a round of ammunition in said chamber.

69. (New - Pending). The electronic firearm of claim 60 and further comprising a system authorization switch communicating with said system control means for controlling access to the firearm.

70. (New - Pending). A method of firing a round of electrically-initiated ammunition from an electronic firearm, comprising:

Monitoring a sequence of operative conditions with a system control;

Sending a signal to the system control upon activation of a trigger;

Controlling and coordinating distribution of power to a firing pin, including isolating and preventing the firing pin from receiving power upon the occurrence of at least one condition selected from:

- a. the firearm being in a sleep mode;
- b. insufficient energy to initiate the firing of the round of ammunition;
- c. detection of voltage from a voltage supply below a predetermined level;
- d. detection of voltage from a voltage supply above a predetermined level;

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- e. absence of a round of ammunition in a chamber of the firearm;
 - f. lack of viability of the round of ammunition;
 - g. inactivity of the firearm for a predetermined time;
 - h. failure of any electronically controlled and operated components of the firearm;
 - i. failure of any programmed condition;
 - j. unauthorized activation of the firearm; and
 - k. a safety mechanism of the firearm being in a safe position;

Transmitting power to the firing pin from the voltage supply for transmission to the round of ammunition; and

Applying power to the round of ammunition.

71. (New - Pending). The method of claim 70 and further including indicating the status of the firearm.

72. (New - Pending). The method of claim 70 and wherein the step of controlling and coordinating distribution of power comprises preventing a voltage increasing means from receiving power from the voltage supply.

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73. (New - Pending). A method of firing a round of electrically-initiated ammunition from an electronic firearm, comprising:

Monitoring a sequence of operative conditions with a system control;

Sending a signal to the system control upon activation of a trigger;

Controlling and coordinating distribution of power to a firing pin, including isolating and preventing the firing pin from receiving power upon the occurrence of at least one condition selected from:

- a. the firearm being in a sleep mode;
- b. insufficient energy to initiate the firing of the round of ammunition;
- c. detection of voltage from a voltage supply below a predetermined level;
- d. detection of voltage from a voltage supply above a predetermined level;
- e. absence of a round of ammunition in a chamber of the firearm;
- f. lack of viability of the round of ammunition;
- g. inactivity of the firearm for a predetermined time;
- h. failure of any electronically controlled and operated components of the firearm;
- i. failure of any programmed condition;
- j. unauthorized activation of the firearm; and
- k. a safety mechanism of the firearm being in a safe position;

Preventing the system control from accepting a signal from the trigger generated by actuation of the trigger when the safety mechanism of the firearm is in the safe position;

Transmitting power to the firing pin from the voltage supply for transmission to
the round of ammunition; and

Applying power to the round of ammunition.

74. (New - Pending). The method of claim 73 and wherein controlling and
coordinating distribution of power to the firing pin includes increasing voltage in a voltage
increasing means.

75. (New - Pending) An electronic firearm, comprising:

a barrel;

a chamber in which a round of electrically initiated ammunition is received;

a firing pin;

a trigger for initiating firing of the round;

a voltage supply for supplying power to said firing pin for firing the round;

a system control for monitoring the firearm and controlling the power supplied to

said firing pin in response to ~~malfunction on the system~~ failure of any operative condition required for firing the
firearm, said system control including a switching means for isolating said firing pin from

said voltage supply to prevent the firing of the round of ammunition; and

a means for electronically detecting the presence of a round of ammunition in the

chamber.

76. (New - Pending). An electronic firearm, comprising:

a barrel;

a chamber in which a round of electrically initiated ammunition is received;

a conductive firing pin for transmitting power to the round of ammunition;

a voltage supply for supplying power for initiating firing of the round of ammunition;

a system control powered by said voltage supply and monitoring the firearm for controlling the firing of the round of ammunition, said system control including a voltage increasing means for increasing the voltage from the voltage supply to a level necessary to initiate firing of the round of ammunition and for controlling the transmission of power through said firing pin to the round of ammunition, said system control including a switching means for isolating said firing pin from receiving power supplied by said voltage supply upon the occurrence of at least one of the following conditions:

a. the firearm being in a sleep mode;

b. insufficient energy to initiate the firing of the round of ammunition;

c. detection of voltage from said voltage supply below a predetermined level;

d. detection of voltage from said voltage supply above a predetermined level;

e. absence of a round of ammunition in said chamber;

f. inactivity of the firearm for a predetermined time;

g. unauthorized activation of the firearm;

h. failure of any electronically controlled and operated components of
the firearm; and

i. failure of the system control; and

a trigger assembly communicating with said system control and having a trigger,

whereby as said trigger is activated, a signal is sent to said system control to initiate firing
of the round of ammunition.

77. (New - Pending). New - Pending). The electronic firearm of claim 76 and
wherein said switching means isolates said voltage supply from said voltage increasing means.

78. (New - Pending). The electronic firearm of claim 76 and wherein said switching
means isolates said voltage increasing means from said firing pin.

79. (New - Pending). The electronic firearm of claim 76 and further comprising an
indicator communicating with said system control for indicating the status of the firearm.

80. (New - Pending). The electronic firearm of claim 76 and further comprising a
system authorization switch communicating with said system control for controlling access to the
firearm.

81. (New - Pending). The electronic firearm of claim 76 and further including means for electronically detecting the presence of a round of ammunition in said chamber.

82. (New - Pending). The electronic firearm of claim 76 and further including a firearm safety mechanism movable between a fire position and a safe position for placing the firearm in a nonoperative condition upon movement of said safety mechanism to a safe position.

83. (New - Pending). The electronic firearm of claim 76 and wherein said system control includes programming for performing an operational sequence to monitor and control the firearm including initiating a sleep mode for the firearm to place the firearm in a nonoperative condition.

84. (New - Pending). The electronic firearm of claim 76 and wherein said system control comprises at least one of the following: a microprocessor, microcontroller, software, firmware, microcode, digital logic, analog logic, and custom integrated logic.

85. (New - Pending). A method of firing a round of electrically-initiated ammunition from a firearm, comprising

receiving a round of ammunition within a chamber;

sending a signal to a system control to initiate firing of the round of ammunition

as a trigger is activated;

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supplying power from a voltage supply for initiating firing of the round of
ammunition;

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increasing the voltage from the voltage supply to a level necessary to initiate
firing of the round of ammunition;

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monitoring the firearm with the system control and controlling the firing of the
round of ammunition with the system control;

isolating said firing pin from receiving power supplied by the voltage supply upon
the detection of at least one of the following conditions by the system control:

- a. the firearm being in a sleep mode;
- b. insufficient energy to initiate the firing of the round of
ammunition;
- c. detection of voltage from the voltage supply below a
predetermined level;
- d. detection of voltage from the voltage supply above a
predetermined level;
- e. absence of a round of ammunition in the chamber;
- f. inactivity of the firearm for a predetermined time;
- g. unauthorized activation of the firearm;
- h. failure of any programmed condition required for firing;
- i. failure of any electronically controlled and operated components of
the firearm; and
- j. failure of the system control; and